PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference FP20030506	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/JP 03/08899	International filing date *(day/month/year)* 14.07.2003	Priority date *(day/month/year)* 18.07.2002
International Patent Classification (IPC) or both national classification and IPC C08G83/00		
Applicant SHARP KABUSHIKI KAISHA et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 9 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
13.03.2004	29.11.2004
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer olde Scheper, B Telephone No. +49 89 2399-2141

Form PCT/IPEA/409 (Cover Sheet) (January 2004)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/JP 03/08899

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-70	as originally filed

Claims, Numbers

10, 12 (part), 13 (part)	as originally filed
1-9, 11, 12 (part), 13 (part), 14-20	received on 07.10.2004 with letter of 09.07.2004

Drawings, Sheets

1/3-3/3	as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☒ the claims, Nos.: 10

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-9,11-20
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-9,11-20
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-9,11-20
	No:	Claims	

2. Citations and explanations

   see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

D1: PATENT ABSTRACTS OF JAPAN vol. 1997, no. 07, 31 July 1997 (1997-07-31) & JP 09 059355 A (AGENCY OF IND SCIENCE &TECHNOL; STANLEY ELECTRIC CO LTD), 4 March 1997 (1997-03-04)

D2: WO 99/21935 A (SAMUEL IFOR DAVID WILLIAM ;HALIM MOUNIR (GB); ISIS INNOVATION (GB)) 6 May 1999 (1999-05-06)

D3: LUO J ET AL: "Synthesis, Light Emission, and Optical Limiting of Hyperbranched Poly[Phenylene-alt-(2,5-Thienylene)s]" POLYMER PREPRINTS, vol. 42, no. 2, 2001, pages 527-528, XP009020396

D4: ESFAND R ET AL: "POLY(AMIDOAMINE) (PAMAM) DENDRIMERS: FROM BIOMIMICRY TO DRUG DELIVRY AND BIOMEDICAL APPLICATIONS" DRUG DISCOVERY TODAY, ELSEVIER SCIENCE LTD, GB, vol. 6, no. 8, April 2001 (2001-04), pages 427-436, XP001029831 ISSN: 1359-6446

1. The present application relates to:
   (i) a dendritic polymer (see claims 1-9, 10-15, and
   (ii) an electronic devise (see claims 16-20).

2. It is clear from the description that hyperbranched polymers and dendrons or dendrimers (cf. D4, Figure 1) are encompassed within the scope of the claims on file.

3. Document D1 discloses polymeric materials obtained from the general Formula 1. Said Formula 1 is repeated and a polymeric structure is obtained. Document D1 does neither disclose different end groups, nor their specific properties.

4. Document D2 discloses light-emitting dendrimers and devices made thereof (cf. claims 1-37; page 3, line 20 to page 6, line 21). In claim 15 thiophene and divinylthiophene are expresses verbis cited as core molecules. However, it appears that D2 does not disclose a repetition of the thiophene molecules and does therefore not disclose the structure as presently claimed.

5. Document D3 discloses hyperbranched poly[phenylene-*ALT*-(2,5-thienylene)s]. Document D3 does neither disclose different end groups, nor their specific properties.

6. The subject matter of the claims on file are deemed to meet the requirements of Art. 33(2) PCT.

7. The object of the present claimed application is to provide for further dendritic polymers serving as organic semiconductor materials which is isotropic and exhibits a high carrier conductivity, as well as semiconductor devices containing said dendrimer (see page 7, lines 5-9).

   The examples show that said object has been met.

   Since the available prior art does not contain any incentive for the skilled worker to provide for the claimed dendrimers exhibiting the required properties, an inventive step can be recognised (Art. 33(3) PCT).

8. The present application satisfies the criterion set forth in Article 33(4) PCT because the subject matter of claims 1-9 and 11-20 is industrially applicable.